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<p>(21) International Application Number: PCT/DK91/00224 (22) International Filing Date: 9 August 1991 (09.08.91) (30) Priority data: 1894/90 9 August 1990 (09.08.90) DK (71) Applicant: JASOPAN V/KAMMA JENSEN [DK/DK]; Knivholtvej 9, DK-9900 Frederikshavn (DK). (72) Inventor: JACOBSEN, Kurt ; Beerstedvej 16, DK-7752 Snedsted (DK). (74) Agent: SKØTT-JENSEN, K.; Lemmingvej 225, DK-8361 Hasselager (DK). (81) Designated States: FI, NL, SU. +</p>		<p>Published With international search report. In English translation (filed in Danish).</p>
<p>(54) Title: A SCRAPING APPARATUS</p> <p>(57) Abstract</p> <p>A scraping apparatus is used at the scraping off of the layer of fat from fur pelts, such as mink and foxes' pelts immediately upon pelting the animals. The apparatus comprises at least one driven pole (10) over which the pelts are pulled, the flesh side facing outwardly and are retained tautly by hooks (28) in the hind shanks at the thicker end of the pole. A scraper unit (6) having a scraper (46) can be moved axial parallel to the pole (10), said scraper can be brought into engagement with the flesh side of the pelt for scraping off the layer of fat. In order to achieve a scraping of the pelts also during the return movement of the scraper unit, the apparatus can be designed such that the direction of rotation of the pole can be reversed during the return movement, and such that the scraper during this is engaging the pelt. Hereby an increased capacity is achieved but also a more efficient cleaning because the pelts are scraped in one as well as the opposite direction. The reversing is carried out in the following manner: the hooks (28) that retain the pelt tautly are provided with levers of such physical size that they can actuate an inductive sensor being matched thereto for reversing the apparatus to its initial position. The speed of the pole and the scraping unit can be synchronized and the scraping unit is pulled by a worm shaft (52) axial parallel to the pole and via a gear pulled by the same drive motor that moves the pole. In order to facilitate the attaching and removal of the pelts the pole is suspended at its thicker end round the drive shaft and the thinner end (24) can be retained in a bearing bush that is displaceable into and out of engagement with the end.</p>		

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A scraping apparatus

The present invention relates to an apparatus for scraping off the layer of fat from fur pelts such as mink and foxes' pelts immediately upon pelting the animals and comprising at least one driven pole over which the pelts are pulled, the flesh side facing outwardly, and are retained tautly by hooks at the hind shanks at the thicker end of the pole as well as a scraper unit being axial parallel displaceable along the pole having a scraper which may be brought into engagement with the flesh side of the pelt for scraping off the layer of fat.

Scraping apparatus of this type is widely used when pelting at pelting plants or at fur farms having their own pelting facilities. DK-PS 152 847 is one such example.

Upon the pelting the pelts are pulled on the pole such that the hind part of the body is pulled over the pole having its fur facing this and the flesh side facing outwardly and on which a thick layer of fat remains. This layer of fat must be removed before drying the pelts and this is particularly important at the forelegs and the hind part of the body being both somewhat inaccessible as well as the pelt being exceptionally moist. The prior art scraping apparatuses only perform a scraping during the forward movement of the scraper unit from the thinner end of the pole towards its thicker end. During the return movement the scraper is swung out to disengage the pelt. Furthermore, the mounting and the removal of the pelts are rather laborious in the prior art constructions, because the thinner end of the pole must be disengaged from its support as the pelts are pulled on and off along this. Due to the length of the pole, the fast rotation and the pressing of the scraper against the pelt it is of vital importance that the pole

is supported at both ends during scraping.

The object of the present invention has been to find a solution to these obstacles in the prior art constructions. This task is solved by a construction which is characteristic in being designed such that the rotating direction of the pole is reversible during the return of the scraping unit and that the scraper during this engages the pelt. Consequently a scraping of the pelt is obtained in both the forward and return movements of the scraping unit. However, it is equally important that a better scraping can be achieved as the pelt first is scraped in one direction and then in the reverse direction. It is especially effective for the areas around the foreshanks and the hind part of the body, where those portions that cannot be worked at the forward movement of the scraper can be reached during the return movement. The direction of rotation may be changed by a gear or by turning the direction of rotation of the drive motor.

It has also proved an advantage that the speeds of the poles and the scraping units can be synchronized such that they can be adapted to the actual pelts for an optimum efficient stripping of the pelts.

The synchronizing and the turning of direction of rotation can appropriately be performed by moving the scraping unit along a worm bar placed axial parallel to the pole and via a gear it is pulled by the same drive motor that rotates the pole.

A fast and convenient installation and removal of the pelts can be obtained by a construction where the pole is suspended by the thicker end about the drive shaft, and that a shaft end protrudes from the thinner end of the shaft and which can be retained in a bearing bush which can be brought to engaging and disengaging the shaft end. As compressed air is always available at pelting plants an operationally simple change is ob-

tained by applying an pneumatic cylinder and place the bearing bush at the piston rod of the cylinder such that the bearing is pushed out of and into engagement with the shaft end of the pole by activating the compressed-air cylinder. For constructional reasons a through-going shaft in the pole is usually preferred, but a short shaft end might just as well be placed at or in the thinner end of the pole.

The pelt is retained tautly on the pole in the longitudinal direction by hooks which by a cord drive are spring-loaded by springs situated inside the pole. The hooks are provided with operating levers and by giving these a physical size such that they can actuate an inductive sensor being matched thereto, the levers may be used to reversing the apparatus to its return movement to the initial position. The hooks that are gripping the hind legs of the pelt are always situated near the edge of the pelt and are consequently well-suited indicators for the reversing.

The invention provides a user-oriented scraping apparatus of large capacity and performing a more efficient stripping of the pelts than the prior art constructions do and without significantly increasing the cost of production.

An embodiment of a scraping apparatus according to the invention is illustrated in the attached drawing in which:-

Fig. 1 is a direct frontal view of the apparatus, i.e. the side from which the operator operates the apparatus,

Fig. 2 is a direct lateral view of the apparatus as seen from the left end in relation to Fig. 1,

Fig. 3 is a direct top view of the apparatus, and

Fig. 4 is a direct top view of the pole arrangement of the apparatus.

The scraping apparatus consists in the main of a supporting frame 2 in which a pole arrangement 4 and a scraping unit 6 are resting, and a control box 8 is mounted to the frame.

The pole arrangement comprises two conical poles 10 being embedded and retained in a traverse 12, this again being attached to a longitudinal pivot shaft 14 placed on the symmetry line between the two poles and with the ends resting in the frame such that the poles can be turned between a scraping position where the pelts are scraped, and an attaching position, where the pelts can be pulled onto the poles. Alteration between the two positions is carried out by turning of the pole arrangement by lever 16 being situated in the extension of the traverse. In the scraping position, where the pole lies within the frame, this is pulled by a gear motor 18, as the axle journal of the pole passing through the traverse is provided with a sprocket 20, which in this position enters into engagement with a sprocket 22 from the gear motor. In this scraping position the thinner end of the pole is fixed as the end of a protruding longitudinal shaft 24 is fixed in a bearing bush or the like which is carried at the piston rod 26 of the pneumatic cylinder such that the bearing bush can be pushed in or out of engagement. In the scraping position the pole is thus resting at either end which is an obvious advantage in relation to stability and dimensioning of bearings and suspension.

In the attaching position the pole lies outside the limits of the frame and is freely protruding such that the pelt may conveniently be pulled up the pole. The pelt is retained at the hind shanks by two hooks 28 connected to a cord 29 entering the hollow pole where the cord is loaded by a spring 30. From the handle 31 the cord runs round a spool into and down through the

pole, round the spring and up again where by a fastener it is fastened to the centre shaft of the pole. In its inactive position the hook sits in a parking hoop 32. In order to prevent inadvertently touching of the other pole being in its scraping position, they are kept separated by a longitudinal central shield 34 fastened to the pivot shaft.

The scraping unit 6 comprises a supporting bracket 36 which by slide bearings 38 is carried on a longitudinal slide rod 40 mounted in the frame. At the top the bracket is guided by two pairs of upwardly protruding eccentric axle journals 42 on a longitudinal bearer 43 in the frame. At the supporting bracket a tiltable bracket 44 is journalled at which an electric motor 45 is suspended directly at the shaft end of which the scraping knife 46 is mounted. The scraping knife is enclosed inside a funnel mounted to the motor and with an opening for the knife towards the pole and a funnel opening for ejection of the removed fat. By a pneumatic cylinder 49 the scraping knife can be brought into and out of contact with the pelt as the tiltable bracket as a unit swings towards or away from the pole. Attached to the bracket by a carrier fixture 48 and above the pole a sawdust bin 50 is attached, the latter having a portioning device at its bottom for sprinkling the pelt with sawdust. For collection of stray surplus sawdust and other wastes a tray 51 is placed in the frame below the pole in its scraping position.

The scraper unit can be displaced along the pole by a worm 52 placed in the frame and parallel to the slide bar and cooperating with a nut 54 at the carrier bracket. The worm is driven via a belt drive 56 by the same gear motor that pulls the pole. The belt pulley 59 and the sprocket that pulls the pole are both mounted at the motor shaft. Hereby a direct connection between the speed of rotation and the forward speed of the scraper

unit is ascertained. As a consequence of changing the speed of rotation of the gear motor both the speeds of the scraping unit and the speed of the pole will change such that they always match.

As the pelts have varying lengths it is difficult to determine a sensible limit stop for the forward run of the scraping unit. By utilizing the levers at the hooks to determine the limit stop a precise limit stop is achieved in relation to the pelt irrespective of its lengths because the hooks are fastened to the hind legs of the pelt. At the scraping unit an inductive sensor 58 is placed, being released by the levers of the hooks as these are designed of such dimension that they activate the sensor.

When operating the scraping apparatus a pelt having its fat side facing outwardly is pulled up the free pole and is retained tautly by hooks being fastened at the hind shanks. Then the pole arrangement is turned such that the pole arrives at its scraping position where its sprocket automatically engages the sprocket of the gear motor lying at the circle of rotation of the sprocket of the pole arrangement. After this the thinner end of the pole is fixed by activating the pneumatic cylinder such that the bearing bush enters into engagement with the central shaft of the pole. Simultaneously the pole arrangement is locked against turning by means of two pneumatic cylinders 60 (the drawing shows only one) becoming activated such that the piston ends engage two corresponding holes at a disc 62 mounted at the end of the pivot shaft. Thereupon the scraping motor as well as the gear motor are started and the scraper is swung into engagement with the pelt by means of the tilting cylinder. The scraper unit is now displaced along the pole towards its thicker end during scraping off the layer of fat from the pelt, until the inductive sensor is activated by the hook levers. Thereby the gear motor stops

and the directions of rotation of the pole and the worm are turned such that the scraper unit reverses and the pole runs reversely. During the reversal of direction the scraper unit is perpetually in contact with the pelt and the scraper runs in the same direction both during its forward and its return movements. By carrying out reciprocal scraping an excellent scraping off of the layer of fat is achieved, even at the most inaccessible places, because the pelt is worked from either direction, and at the same time being subjected to the reciprocals of the pole. The return movement is stopped by a stop collar 64 and a micro switch 66. The initial position is fixed each time as opposed to the reversing position. During the scraping process the operator has had the opportunity of removing an already scraped pelt from the other pole and attaching a new one such that the apparatus is ready again.

During scraping of the pelts it is possible to adjust the speed of the motor such that a maximum cleaning of the pelts is achieved. These are settings that the operator determines based on personal experience.

The embodiment shown is only an example of the invention as it may have a variety of designs. However, reciprocal scraping is of importance and synchronizing of the speeds of the pole and of the scraper unit as well as determination of the reversing point of said scraper unit at the hook levers.

C L A I M S:

1. A scraping apparatus for scraping off the layer of fat from fur pelts, such as mink and foxes' pelts immediately upon pelting the animals and comprising at least one driven pole (10) on which the pelts are pulled, their flesh sides facing outwardly, and are retained tautly by hooks (30) at the hind shanks at the thicker end of the pole as a scraper unit (6) that is axial parallel displaceable to the pole provided with a scraper (46) which can be brought into engagement with the flesh side of the pelt for scraping off the layer of fat, characterized in that it is designed such that the direction of rotation can be reversed during the return movement of the scraper unit, and that the scraper during this is in engagement with the pelt.

2. A scraping apparatus according to claim 1 characterized in that the speeds of the pole (10) and the scraper unit (6) are synchronized.

3. A scraping apparatus according to claims 1 or 2 characterized in that the scraper unit (6) is displaced along a worm (52) axial parallel to the pole and via a gear is moved by the same drive motor that rotates the pole.

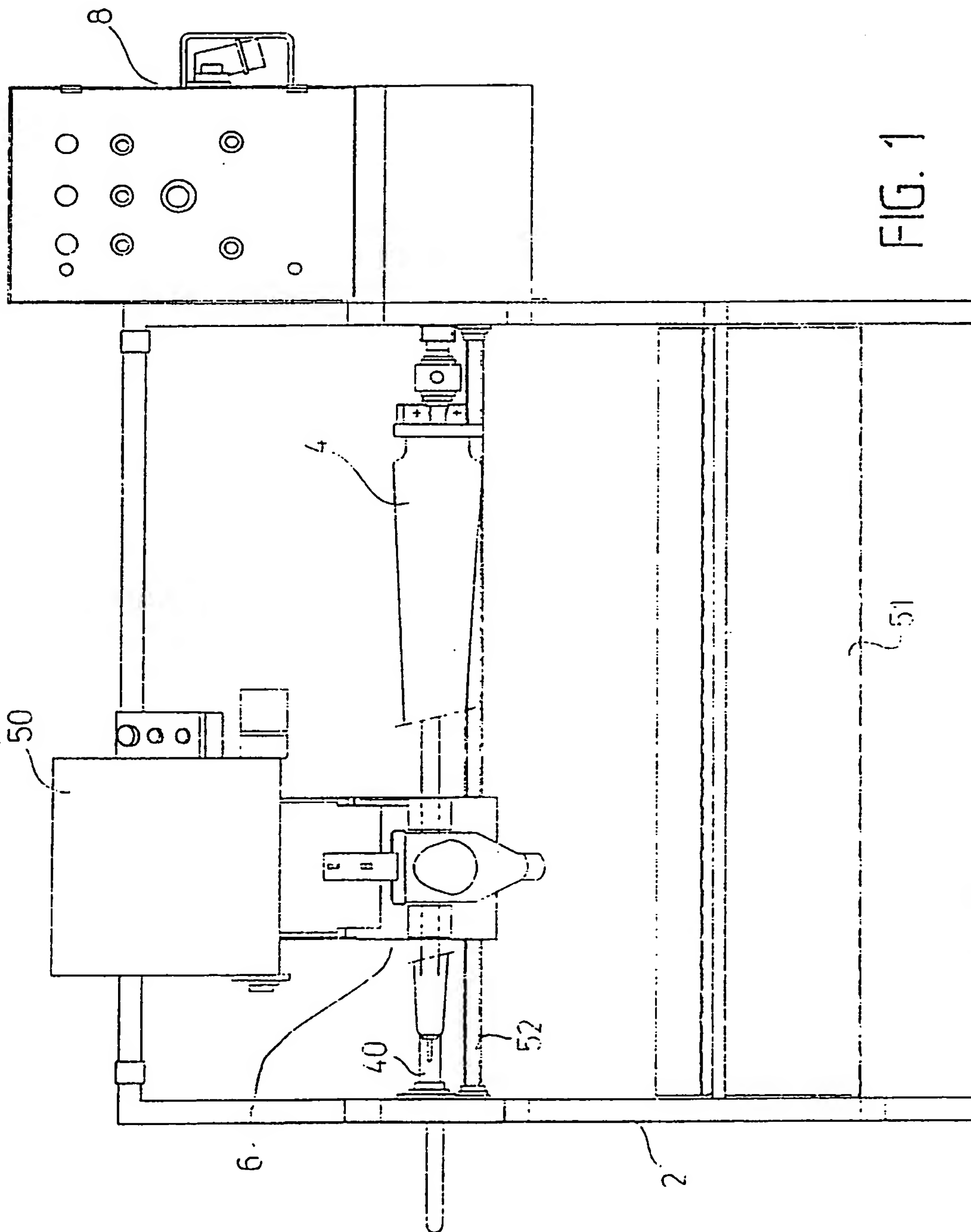
4. A scraping apparatus according to claims 1 or 2 characterized in that the pole (10) is suspended by its thicker end round the drive shaft and that a shaft end (24) protrudes from the thinner end and which can be retained in e.g. a bearing bush, the latter being capable of engaging and disengaging the shaft end.

5. A scraping apparatus according to claim 4 characterized in that the bearing bush is situated at the

end of an pneumatic cylinder (26) in the frame such that it can be pushed out of and into engagement with the shaft end.

6. A scraping apparatus according to claims 1, 2, 3, 4 characterized in that the hooks (30) retaining the pelt tautly are provided with levers (31) of such physical size that they can affect an inductive sensor (58) being matched to the purpose of reversing the apparatus to return movement to its initial position.

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SUBSTITUTE SHEET

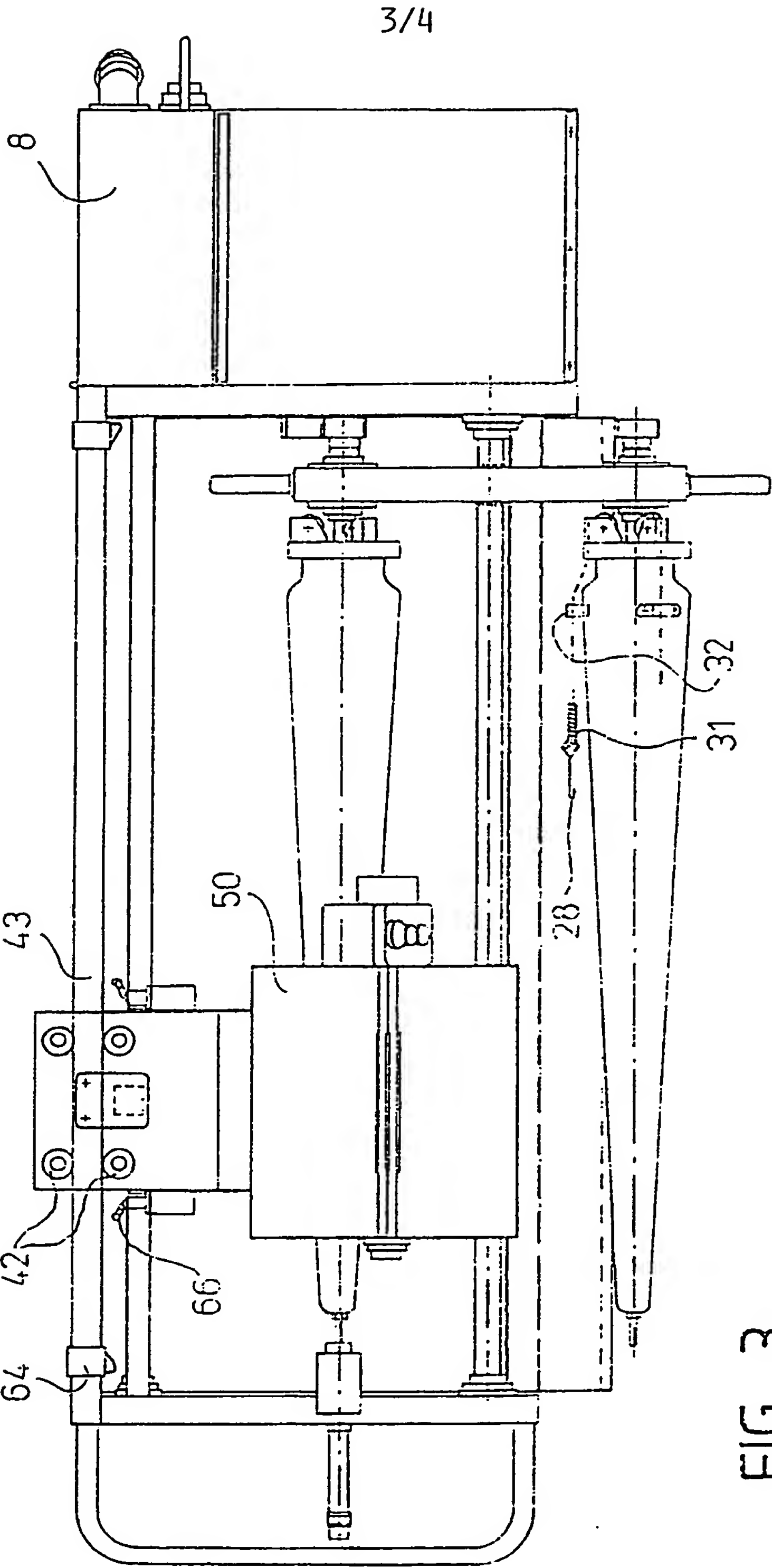


FIG. 3

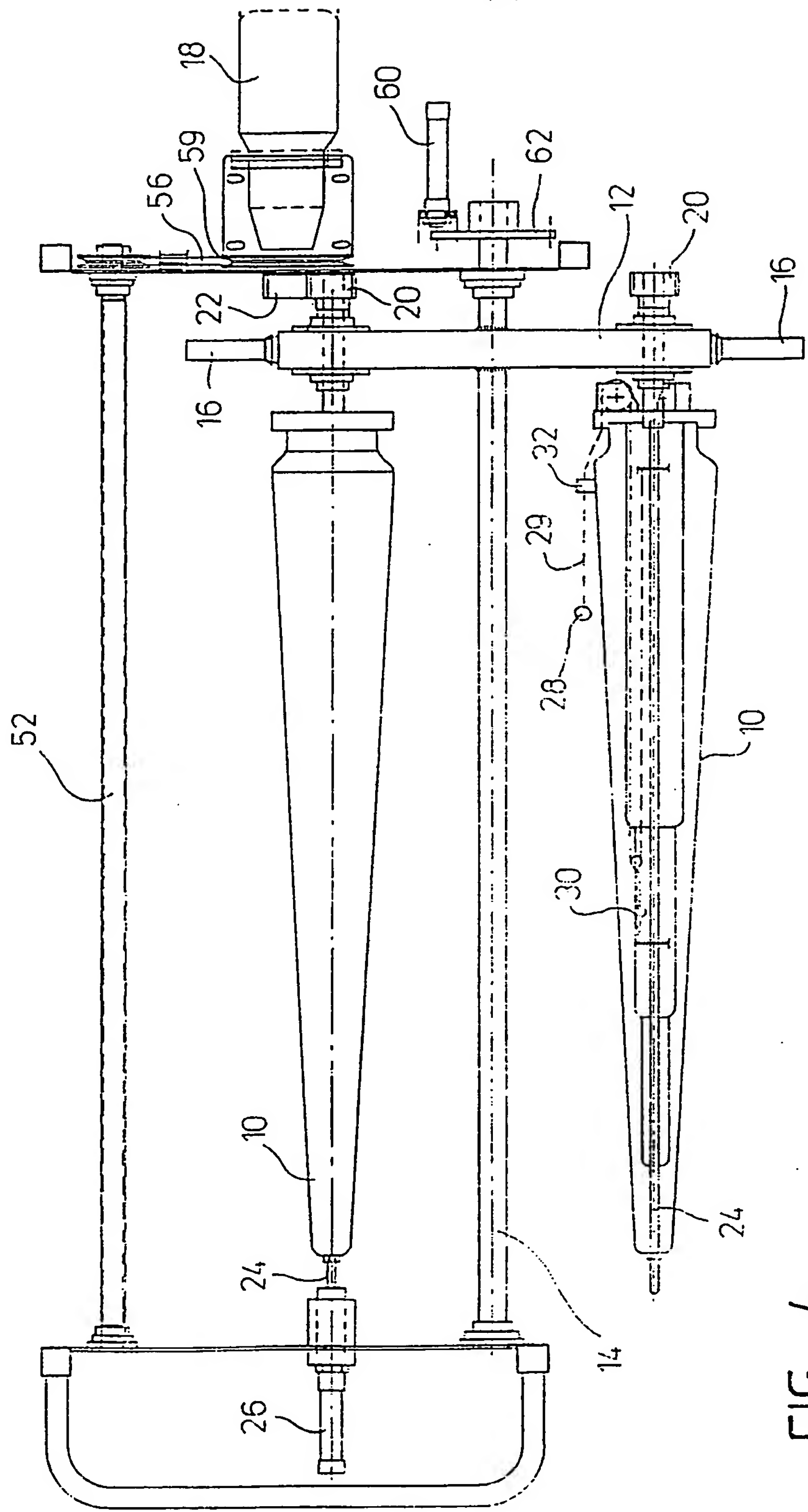


FIG. 4

INTERNATIONAL SEARCH REPORT

International Application No PCT/DK 91/00224

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC IPC5: C 14 B 1/10																	
II. FIELDS SEARCHED <div style="text-align: right; margin-right: 100px;">Minimum Documentation Searched⁷</div> <table style="width: 100%; border: none;"> <tr> <td style="width: 25%; border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 2px;">Classification System</div> </td> <td style="border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 2px;">Classification Symbol:</div> </td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: middle;">IPC5</td> <td style="border: none; text-align: center; vertical-align: middle;">C 14 B</td> </tr> </table> <div style="text-align: center; margin-top: 10px; font-size: small;"> Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched⁸ </div> <p style="margin-top: 10px;">SE,DK,FI,NO classes as above</p>			<div style="border: 1px solid black; padding: 2px;">Classification System</div>	<div style="border: 1px solid black; padding: 2px;">Classification Symbol:</div>	IPC5	C 14 B											
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III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; text-align: center; font-size: small;">Category *</th> <th style="width: 70%; text-align: center; font-size: small;">Citation of Document,¹¹ with indication, where appropriate, of the relevant passages¹²</th> <th style="width: 20%; text-align: center; font-size: small;">Relevant to Claim No.¹³</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td>SE, C, 165294 (P H PETTERSSON) 11 November 1958, see the whole document --</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">A</td> <td>DK, B, 113795 (KUSTI RITVOS) 28 April 1969, see the whole document --</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">A</td> <td>SE, B, 445467 (OY ERCO-MEK AB) 23 June 1986, see the whole document --</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">A</td> <td>US, A, 4787221 (JOHANSSON) 29 November 1988, see the whole document -- -----</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>			Category *	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	A	SE, C, 165294 (P H PETTERSSON) 11 November 1958, see the whole document --	1	A	DK, B, 113795 (KUSTI RITVOS) 28 April 1969, see the whole document --	1	A	SE, B, 445467 (OY ERCO-MEK AB) 23 June 1986, see the whole document --	1	A	US, A, 4787221 (JOHANSSON) 29 November 1988, see the whole document -- -----	1
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<div style="display: flex; justify-content: space-between; font-size: x-small;"> <div style="width: 48%;"> <p>* Special categories of cited documents. ¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 48%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p> </div> </div>																	
IV. CERTIFICATION <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 2px;">Date of the Actual Completion of the International Search</div> </td> <td style="border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 2px;">Date of Mailing of this International Search Report</div> </td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: middle;">29th October 1991</td> <td style="border: none; text-align: center; vertical-align: middle;">1991 -11- 0 5</td> </tr> <tr> <td style="border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 2px;">International Searching Authority</div> </td> <td style="border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 2px;">Signature of Authorized Officer</div> </td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: middle;"> SWEDISH PATENT OFFICE </td> <td style="border: none; text-align: center; vertical-align: middle;"> Jan Nilsson </td> </tr> </table>			<div style="border: 1px solid black; padding: 2px;">Date of the Actual Completion of the International Search</div>	<div style="border: 1px solid black; padding: 2px;">Date of Mailing of this International Search Report</div>	29th October 1991	1991 -11- 0 5	<div style="border: 1px solid black; padding: 2px;">International Searching Authority</div>	<div style="border: 1px solid black; padding: 2px;">Signature of Authorized Officer</div>	SWEDISH PATENT OFFICE	 Jan Nilsson							
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
SE-C- 165294	58-11-11	NONE	
DK-B- 113795	69-04-28	NONE	
SE-B- 445467	86-06-23	SE-A- 8302803	84-11-19
US-A- 4787221	88-11-29	NL-A- 8701161	87-12-16
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